U. S. DEPARTMENT OF AGRICULTURE FOREST SERVICE
PACIFIC NORTHWEST FOREST AND RANGE EXPERIMENT STATION
R. W. COWLIN, DIRECTOR

Research Note

Number 179 Portland, Oregon December 1959

RELEASE OF SUGAR PINE SEEDLINGS AND SAPLINGS BY HARVEST CUTTING

by

William E. Hallin[1/]

Sugar pine, the preferred species to grow on many forest areas in southwestern Oregon, is often seeded or planted on clearcuts there. Advance growth in the form of seedlings, saplings, and poles is common in the mixed-conifer type, and costly planting can be eliminated if this advance growth can be saved during logging and slash disposal. However, if the necessary changes in logging and slash disposal practices are to pay off, long-suppressed understory sugar pine seedlings and saplings must respond satisfactorily to release. A study on the South Umpqua drainage has shown that such sugar pine seedlings will respond with increased height growth after removal of the overstory.

Method and Results

Height growth before and after release was determined by measuring internodes on 49 sugar pine seedlings on areas partially cut. It was necessary to make the study on partially cut areas because no clear-cut areas with surviving sugar pine were available. The trees averaged 3 feet in height at time of release, ranging from 0.5 foot to 9.5 feet tall.

1/ Acknowledgment is made to G. Lloyd Hayes for beginning this study and collecting the field data.

Average annual height growth of the study seedlings before and after release was as follows:

	All seedlings (Inches)	Fastest growing 25% of seedlings (Inches)
1st and 2nd years before release	2.7	4.9
1st and 2nd years after release	3.3	5.2
3rd and 4th years after release	5.2	7.8
5th and 6th years after release	6.7	10.9
7th and 8th years after release	6.9	13.1
9th and 10th years after release	7.6	14.9

Sixteen of the 49 trees grew 12 inches or more a year during one or more postrelease years. None grew as much as 12 inches in a year before release, and only two trees grew 7 inches or more during this time.

Is the faster growth after release due largely to greater tree height? Further analysis of the data shows that when height at the beginning of each growing period is taken into account, height growth after release is greater than before release (fig. 1). As the data were collected from several areas with different dates of release, changes in weather could not have been a factor.

Because the study areas were partially cut, many trees were not fully released. Consequently, it is likely that growth rates after complete removal of the overstory would be greater than shown in this study.

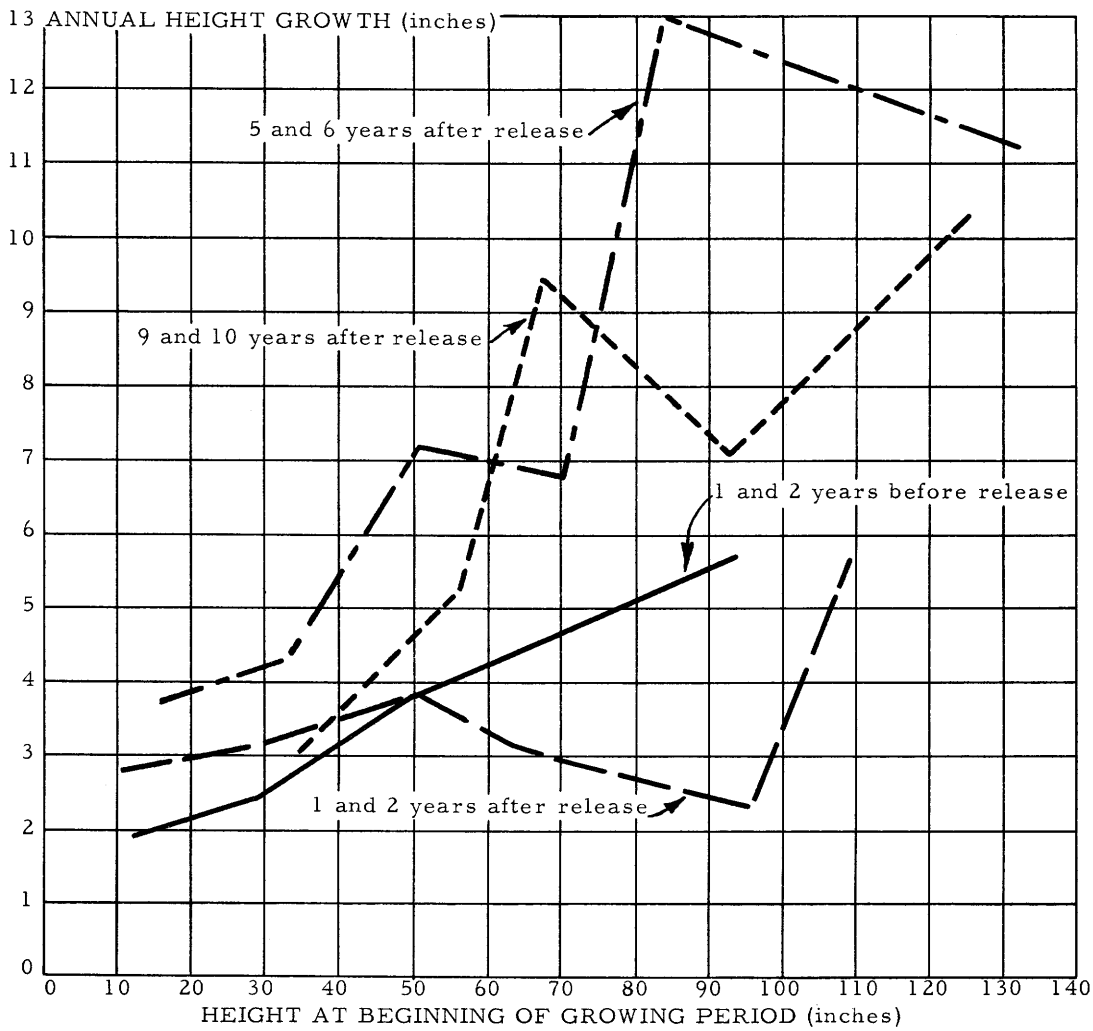

Figure 1.--Response of sugar pine seedlings to release, in terms of height growth.

Conclusions

Understory sugar pine seedlings will respond with increased height growth after removal of an overstory. Consequently, modifications in logging and slash disposal methods in order to save understory sugar pine seedlings and saplings have a reasonable chance of being profitable. Additional trials should be made in order to develop practical modifications, and costs and long-term growth should be analyzed to determine whether or not saving advance growth of sugar pine seedlings is more profitable than starting fresh with planted sugar pine.